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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/135,180	08/17/1998	YUZO OHTSURU	5586D-6845	8990
26021	7590	03/11/2004	EXAMINER	
HOGAN & HARTSON L.L.P. 500 S. GRAND AVENUE SUITE 1900 LOS ANGELES, CA 90071-2611			NGUYEN, LUONG TRUNG	
			ART UNIT	PAPER NUMBER
			2612	

DATE MAILED: 03/11/2004

14

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/135,180

Applicant(s)

OHTSURU, YUZO

Examiner

LUONG T NGUYEN

Art Unit

2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed on 12/22/2003 have been fully considered but they are not persuasive.

In re page 5, Applicant argues that in the present invention, a thinned-out image signal can be obtained before performing frame transfer to the storage section. In contrast, the image signal in Parulski is not thinned out before performing frame transfer to the storage section. Therefore, the structures in accordance with the invention are substantially different from those of Parulski.

In response, it is noted that the features upon which applicant relies (i.e., **a thinned-out image signal can be obtained before performing frame transfer to the storage section**) are not recited in the rejected claims. The claims are rejected based on language claim.

In re pages 5-6, Applicant argues that the newly cited Tani reference teaches that unnecessary charges accumulated in the device are discharged into the substrate. However, such reference does not disclose or suggest that all of the accumulated charges are discharged. Moreover, such reference does not disclose or suggest that charges are discarded by controlling voltages to transfer electrodes.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., **charges are discarded by controlling voltages to transfer electrodes**) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the

Art Unit: 2612

specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In this case, the Applicant recites in claim 1 the limitation “wherein the electric charges generated in the second set of light receiving elements are directly discharged from the second set of light receiving elements to the semiconductor substrate in the first image pickup operation.” Tani discloses this feature. Tani teaches an image pick-up device includes photo diodes 31, in which the unnecessary charges accumulated in the plurality of photo diodes 31 of CCD3 are directly discharge into the substrate 51 (figures 2, 3, column 4, lines 30-44).

In re page 6, Applicant argues that according to the present invention, all charges are discarded by activating all of the transfer electrodes in the second set of light receiving elements during the first operation. During the second operation, the information electrodes are transferred by activating at least one of the other electrodes in all of the light receiving elements. Such structure is neither shown nor suggested by any of the references, taken alone or in the attempted combination thereof.

In response, regarding claim 1, the Applicant claimed the limitation “a first set of plurality of light receiving elements in which at least one of the corresponding transfer electrodes is activated and simultaneously at least one of the transfer electrodes is inactivated in first and second image pickup operations; and a second set of plurality of light receiving elements in which all of the corresponding transfer electrodes is in activated in the first image pickup operation, and at least one of the transfer electrodes is activated and simultaneously at least one of the transfer electrodes is inactivated in second image pickup operation.” The Examiner considers that claim 1 as claimed still does not distinguish from Kazui patent in view of Parulski

Art Unit: 2612

patent and Tani patent. Parulski et al. disclose an electronic camera employs a progressive scan image sensor with a fast dump structure 62 (see abstract, figure 1). Parulski et al. disclose the first image pickup operation is at the time the first two lines 1 and 2 (first set light receiving elements) are read out (transfer electrodes is activated) and the two lines 3 and 4 (second set light receiving elements) are eliminated (transfer electrodes is inactivated); and second image pickup operation is at the time the two lines 5 and 6 (first set light receiving elements) are read out and the two lines 7 and 8 (second set light receiving elements) are eliminated (figure 10, column 7, lines 1-35).

In re page 7, Applicant argues that claim 4 depends from and further defines claim 1 in terms of the difference in impurity concentration between a channel for the first set of light receiving elements P1 and a channel for the second set of light receiving elements P2. Neither of the light receiving elements P1 or P2 corresponds to a horizontal transfer channel. Claim 4 is submitted to clearly distinguish patentably over the prior art.

In response, the Examiner disagrees, regarding claim 4, the Applicant claimed the limitation “ wherein a channel region under the transfer electrode corresponding said first light receiving element and a channel region under the transfer electrode corresponding said second light receiving element differ in their concentration of impurities.” The Examiner considers that claim 4 as claimed still does not distinguish from Kazui patent in view of Parulski patent and Tani patent further in view of Takahashi et al. patent. Takahashi et al. disclose a solid-state image pickup device in which the potential well in the channel region 41 can be made deeper by adding more N-type impurities than those of channel region 31 (figure 5, column 8, lines 18-24).

This shows that the concentration of impurities of channel region 41 is different from the concentration of impurities of channel region 31.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kazui (US 5,121,192) in view of Parulski et al. (US 5,668,597) further in view of Tani (US Re. 36,812).

Regarding claim 1, Kazui discloses a solid-state color imaging device, comprising a semiconductor substrate (N-type semiconductor substrate 50, column 4, lines 5-18, figures 4-6); a semiconductor region (P-type diffusion layer 52, lines 5-18, figures 4-6); a plurality of channel regions (channel regions 1, lines 5-18, figure 3-6); a plurality of picture elements (cells CE, lines 5-18, figure 3); a plurality of transfer electrodes (transfer electrodes 3, 4, lines 5-18, figures 3-6); light receiving elements (light receiving portion LR, column 4, lines 33-40, figure 6); storage elements (charge accumulation portion CA, column 4, lines 33-40, figure 6).

Kazui fails to specifically disclose a first set of plurality of light receiving elements in which at least one of the corresponding transfer electrodes is activated and simultaneously at least one of the transfer electrodes is inactivated in first and second image pickup operations; and a second set of plurality of light receiving elements in which all of the corresponding transfer

Art Unit: 2612

electrodes is activated in the first image pickup operation, and at least one of the transfer electrodes is activated and simultaneously at least one of the transfer electrodes is inactivated in second image pickup operation. However, Parulski et al. disclose an electronic camera employs a progressive scan image sensor with a fast dump structure 62 (see abstract, figure 1). Parulski et al. disclose the first image pickup operation is at the time the first two lines 1 and 2 (first set light receiving elements) are read out (transfer electrodes is activated) and the two lines 3 and 4 (second set light receiving elements) are eliminated (transfer electrodes is inactivated); and second image pickup operation is at the time the two lines 5 and 6 (first set light receiving elements) are read out and the two lines 7 and 8 (second set light receiving elements) are eliminated (figure 10, column 7, lines 1-35). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Kazui by the teaching of Parulski et al. in order to provide a high quality progressive scan still image (column 6, line 51).

Kazui and Parulski et al. fail to specifically disclose wherein the electric charges generated in the second set of light receiving elements are directly discharged from the second set of light receiving elements to the semiconductor substrate in the first image pickup operation. However, Tani teaches an image pick-up device includes photo diodes 31, in which the unnecessary charges accumulated in the photo diodes 31 are directly discharge into the substrate 51 (figures 2, 3, column 4, lines 30-44). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Kazui and Parulski et al. by the teaching of Tani in order to prevent unnecessary electrical charges accumulated by the light receiver from leaking into the signal transfer device before the electrical

Art Unit: 2612

charges accumulated in the light receiver and transferred to the signal transfer device are read.

Doing so, no blooming occurs (column 3, lines 19-30).

Regarding claim 2, Parulski et al. disclose wherein said first set of light receiving elements and said second set of light receiving elements are arranged in a matrix form in a predetermined region on the basis of a predetermined arranged rule (figure 10).

Regarding claim 3, Parulski et al. disclose wherein said first set of light receiving elements and said second set of light receiving elements are aligned in a row direction, and said first set of light receiving elements and said second set of light receiving elements are alternately arranged in a column direction (figure 10).

4. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kazui (US 5,121,192) in view of Parulski et al. (US 5,668,597) and Tani (US Re. 36,812) further in view of Takahashi et al. (US 6,288,744).

Regarding claim 4, Kazui, Parulski et al. and Tani fail to specifically disclose wherein a channel region under the transfer electrode corresponding said first light receiving element and a channel region under the transfer electrode corresponding said second light receiving element differ in their concentration of impurities. However, Takahashi et al. disclose a solid-state image pickup device in which the potential well in the channel region 41 can be made deeper by adding more N-type impurities than those of channel region 31 (figure 5, column 8, lines 18-24). This shows that the concentration of impurities of channel region 41 is different from the

Art Unit: 2612

concentration of impurities of channel region 31. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device in Kazui, Parulski et al. and Tani by the teaching of Takahashi et al. in order to let charges can be efficiently transferred between two channel regions.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **LUONG T NGUYEN** whose telephone number is (703) 308-9297. The examiner can normally be reached on 7:30AM - 5:00PM.

Art Unit: 2612

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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WENDY R. GARBER
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600